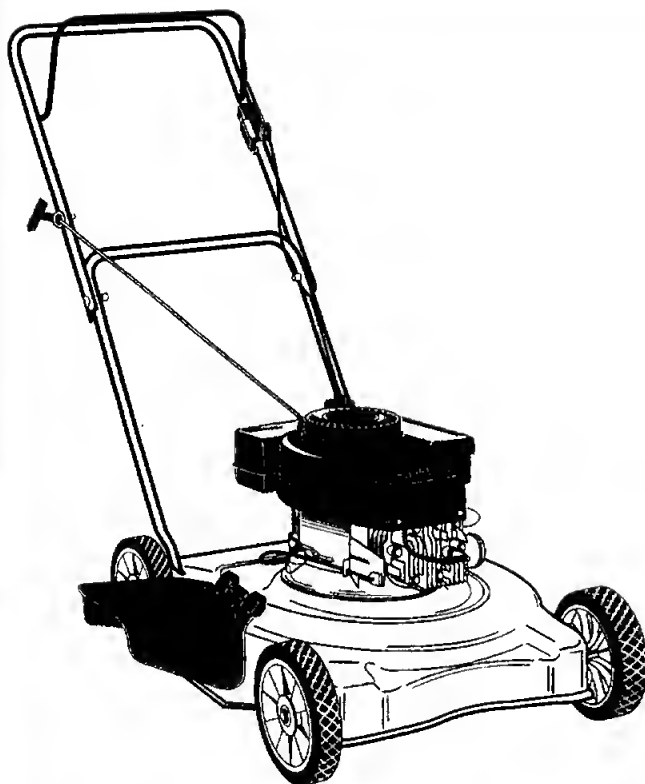


# OWNER'S GUIDE

• ASSEMBLY • OPERATION • MAINTENANCE •



Model 031A Shown

## 20" and 22" ROTARY MOWERS

Model Series  
030 thru 062

### IMPORTANT!

Record the exact **Model No.** and **Serial No.** which appear on the rear of your unit (on the deck) in the space below. You **must** have these numbers, along with the date of purchase, in order to receive warranty or service.

MEETS ANSI SAFETY STANDARDS  
MODEL NO. SERIAL NO.

11  -0

**Important:**  
**Read Safety Rules**  
**and Instructions Carefully**



Made  
in  
AMERICA


**WARNING:** This unit is equipped with an internal combustion engine and should not be used on or near any unimproved forest-covered, brush-covered or grass-covered land unless the engine's exhaust system is equipped with a spark arrester meeting applicable local or state laws (if any). If a spark arrester is used, it should be maintained in effective working order by the operator.

In the State of California the above is required by law (Section 4442 of the California Public Resources Code). Other states may have similar laws. Federal laws apply on federal lands. A spark arrester for the muffler is available through your nearest engine authorized service dealer or contact the service department, P.O. Box 368022, Cleveland, Ohio 44136-9722.

# IMPORTANT

## SAFE OPERATION PRACTICES



THIS SYMBOL POINTS OUT IMPORTANT SAFETY INSTRUCTIONS WHICH, IF NOT FOLLOWED, COULD ENDANGER THE PERSONAL SAFETY AND/OR PROPERTY OF YOURSELF AND OTHERS. READ AND FOLLOW ALL INSTRUCTIONS IN THIS MANUAL BEFORE ATTEMPTING TO OPERATE YOUR LAWN MOWER. FAILURE TO COMPLY WITH THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY. WHEN YOU SEE THIS SYMBOL—  HEED ITS WARNING.



### DANGER:

Your lawn mower was built to be operated according to the rules for safe operation in this manual. As with any type of power equipment, carelessness or error on the part of the operator can result in serious injury. This lawn mower is capable of amputating hands and feet and throwing objects. Failure to observe the following safety instructions could result in serious injury or death.



### I. GENERAL OPERATION

1. Read this owner's guide carefully in its entirety before attempting to assemble this machine. Read, understand, and follow all instructions on the machine and in the manual(s) before operation. Be completely familiar with the controls and the proper use of this machine before operating it. Keep this manual in a safe place for future and regular reference and for ordering replacement parts.
2. Your rotary mower is a precision piece of power equipment, not a plaything. Therefore, exercise extreme caution at all times. Your unit has been designed to perform one job: to mow grass. Do not use it for any other purpose.
3. Never allow children under 14 years old to operate a power mower. Children 14 years old and over should only operate mower under close parental supervision. Only responsible individuals who are familiar with these rules of safe operation should be allowed to use your mower.
4. Keep the area of operation clear of all persons, particularly small children and pets. Stop engine when they are in the vicinity of your mower to help prevent blade contact or thrown object injury. Although the area of operation should be completely cleared of foreign objects, an object may have been overlooked and could be accidentally thrown by the mower in any direction and cause serious personal injury to the operator or any others allowed in the area.
5. Thoroughly inspect the area where the equipment is to be used. Remove all stones, sticks, wire, bones, toys and other foreign objects which could be picked up and thrown by the mower in any direction and cause serious personal injury to the operator or any others allowed in the area. Plan your mowing pattern to avoid discharge of material toward roads, sidewalks, bystanders and the like. To help avoid a thrown objects injury, keep children, animals, bystanders and helpers at least 75 feet from the mower while it is in operation.
6. Always wear safety glasses with side shields or safety goggles during operation or while performing an adjustment or repair, to protect eyes from foreign objects that may be thrown from the machine in any direction.
7. Wear sturdy, rough-soled work shoes and close-fitting slacks and shirts. Shirts and pants that cover the arms and legs and steel-toed shoes are recommended. Do not wear loose fitting clothes or jewelry. They can be caught in moving parts. Never operate a unit in bare feet, sandals, or sneakers.
8. Do not put hands or feet near or under rotating parts. Keep clear of discharge opening at all times as the rotating blades can cause injury.
9. Many injuries occur as a result of the mower being pulled over the foot during a fall. Do not hang on to the mower if you are falling; release the handle immediately.
10. Never pull the mower toward you while you are walking. If you must back the mower away from a wall or obstruction first look down and behind, and then follow these steps:
  - a. Step back from the mower to fully extend your arms.
  - b. Be sure you are well balanced with sure footing.
  - c. Pull the mower back slowly, no more than half way toward you.
  - d. Repeat these steps as needed.
11. Do not operate the mower while under the influence of alcohol or drugs.

12. Disengage the self-propelled mechanism or drive clutch on units so equipped before starting the engine.
13. The blade control handle is a safety device. Never attempt to bypass its operation. Doing so makes the safety device inoperative and may result in personal injury through contact with the rotating blade. The blade control handle must operate easily in both directions and automatically return to the disengaged position when released.
14. Never operate the mower in wet grass. Always be sure of your footing. A slip and fall can cause serious personal injury. Keep a firm hold on the handle and walk, never run. Mow only in daylight or in good artificial light.
15. Stop the blade when crossing gravel drives, walks or roads.
16. If the equipment should start to vibrate abnormally, stop the engine and check immediately for the cause. Vibration is generally a warning of trouble.
17. Shut the engine off and wait until the blade comes to a complete stop before removing the grass catcher or unclogging the chute. The cutting blade continues to rotate for a few seconds after the engine is shut off. Never place any part of the body in the blade area until you are sure the blade has stopped rotating.
18. Never operate mower without proper guards, grass catcher, plates or other safety protective devices in place.
19. Muffler and engine become hot and can cause a burn. Do not touch.
20. Only use accessories approved for this machine by the manufacturer. Read, understand, and follow all instructions provided with the approved accessory.
21. If situations occur which are not covered in this manual, use care and good judgment. Contact your dealer for assistance.



### II. SLOPE OPERATION

For your safety, use the slope gauge included as part of this manual to measure slopes before operating this unit on a sloped or hilly area. If the slope is greater than 15°, as shown on the slope gauge, do not operate this unit on that area or serious injury could result.

#### DO:

- Mow across the face of slopes; never up and down. Exercise extreme caution when changing direction on slopes.
- Watch for holes, ruts, hidden objects, or bumps. Tall grass can hide obstacles.
- Always be sure of your footing. A slip and fall can cause serious personal injury.

#### DO NOT:

- Do not mow near drop-offs, ditches or embankments. The operator could lose footing or balance.
- Do not mow slopes greater than 15° as shown on the slope gauge.
- Do not mow on wet grass. Reduced footing could cause slipping.



### III. CHILDREN

Tragic accidents can occur if the operator is not alert to the presence of children. Children are often attracted to the mower and the mowing activity. Never assume that children will remain where you last saw them.

1. Keep children out of the mowing area and under the watchful care of a responsible adult other than the operator.
2. Be alert and turn mower off if a child enters the area.

## SAFE OPERATIONS PRACTICES (continued)

3. Before and while moving backwards, look behind and down for small children.
4. Never allow children under age 14 to operate the mower.
5. Use extreme care when approaching blind corners, shrubs, trees, or other objects that may obscure your vision of a child or hazard.

### IV. SERVICE

1. Use extreme care in handling gasoline and other fuels. They are extremely flammable and the vapors are explosive.
  - a. Use only an approved container.
  - b. Never remove gas cap or add fuel while the engine is running. Allow engine to cool at least two minutes before refueling.
  - c. Replace gasoline cap securely and wipe off any spilled gasoline before starting the engine as it may cause a fire or explosion.
  - d. Extinguish all cigarettes, cigars, pipes and other sources of ignition.
  - e. Never refuel machine indoors because flammable vapors will accumulate in the area.
  - f. Never store the machine or fuel container inside where there is an open flame or spark such as a gas water heater, space heater, or furnace.
2. Never run an engine inside a closed area.
3. To reduce fire hazard, keep mower free of grass, leaves, or other debris build-up. Clean up oil or fuel spillage. Allow mower to cool at least 5 minutes before storing.
4. Before cleaning, repairing, or inspecting, make certain the blade and all moving parts have stopped. Disconnect the spark plug wire, and keep the wire away from the spark plug to prevent accidental starting.
5. Check the blade and engine mounting bolts at frequent intervals for proper tightness. Also, visually inspect blade for damage (e.g., bent, cracked). Replace with blade which meets original equipment specifications.
6. Keep all nuts, bolts, and screws tight to be sure the equipment is in safe working condition.
7. Never tamper with safety devices. Check their proper operation regularly.
8. After striking a foreign object, stop the engine, remove the wire from the spark plug, and thoroughly inspect the mower for any damage. Repair the damage before starting and operating the mower.
9. Never attempt to make a wheel or cutting height adjustment while the engine is running.
10. Grass catcher components are subject to wear, damage and deterioration, which could expose moving parts or allow objects to be thrown. For safety protection, frequently check components and replace with manufacturer's recommended parts, when necessary.
11. Mower blades are sharp and can cut. Wrap the blade(s) or wear gloves, and use extra caution when servicing them.
12. Do not change the engine governor setting or overspeed the engine. Excessive engine speeds are dangerous.



FIGURE 1.—Warning Label



FIGURE 2.—Safe Operation Label



### WARNING — YOUR RESPONSIBILITY

Restrict the use of this power machine to persons who read, understand and follow the warnings and instructions in this manual and on the machine.

# ASSORTED PARTS LIST

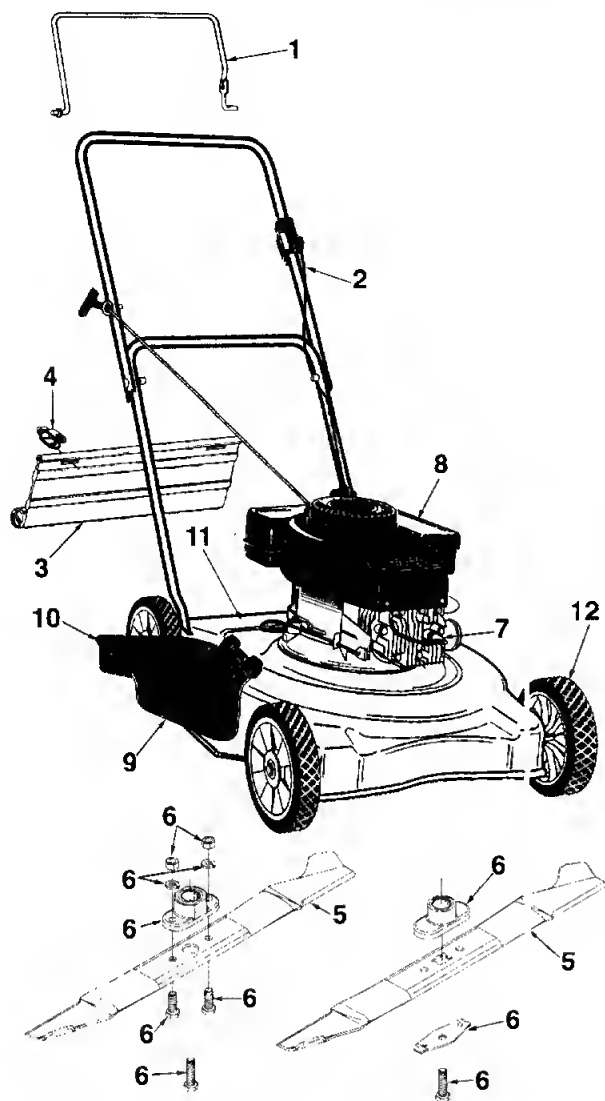


FIGURE 3.—Assorted Parts List

Ref. No.	Part No.	Description	Qty.
1	747-0824	Blade Control Handle	1
2	746-0552	Brake Cable	1
		(031, 041, 061)	
	746-0553	Brake Cable	1
		(030, 040, 050)	
	746-0550	Brake Cable (060, 062)	1
3	731-0872A	Rear Guard Flap 20"	1
	731-1029	Rear Guard Flap 22"	1
4	17098	Hinge Clip	2
5	742-0640†	Blade 20"	1
	742-0620††	Blade 20"	1
	742-0642†	Blade 22"	1
	742-0622††	Blade 22"	1
6	753-0588†	Blade Adapter Kit	1
	753-0484††	Blade Adapter Kit	1
7	*	J19LM—Spark Plug	1
8	*	Air Cleaner Element	1
9	731-1034	Chute Deflector	1
		(030-040)	
	731-1035	Chute Deflector	1
		(050-060)	
		Models 031-041-051*	21 oz.
10	777-1584	Danger—Cut Finger Label	1
11	777-3540	Danger Label/1-800 Label	1
12	**	Wheel Assembly	4

NOTE: Check engine oil level after filling.

190-110-000	Grass Catcher	1
190-114-000†	Mulch Kit	1
	050/052	
190-102-000††	Mulch Kit	1
	050/052	
190-115-000†	Mulch Kit	1
	060/061/062	
190-100-000††	Mulch Kit	1
	060/061/062	

† Blade secured with 1 bolt.

†† Blade secured with 3 bolts.

\* See your engine service dealer.

## \*\*WHEEL CHART

Tread***	Ass'y. Comp.
Rib	734-1168 (6")
Diamond	734-1779 (7")
Diamond	734-1780 (8")

\*\*\*Tread Type: Rib ; Diamond 



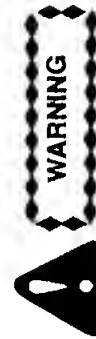
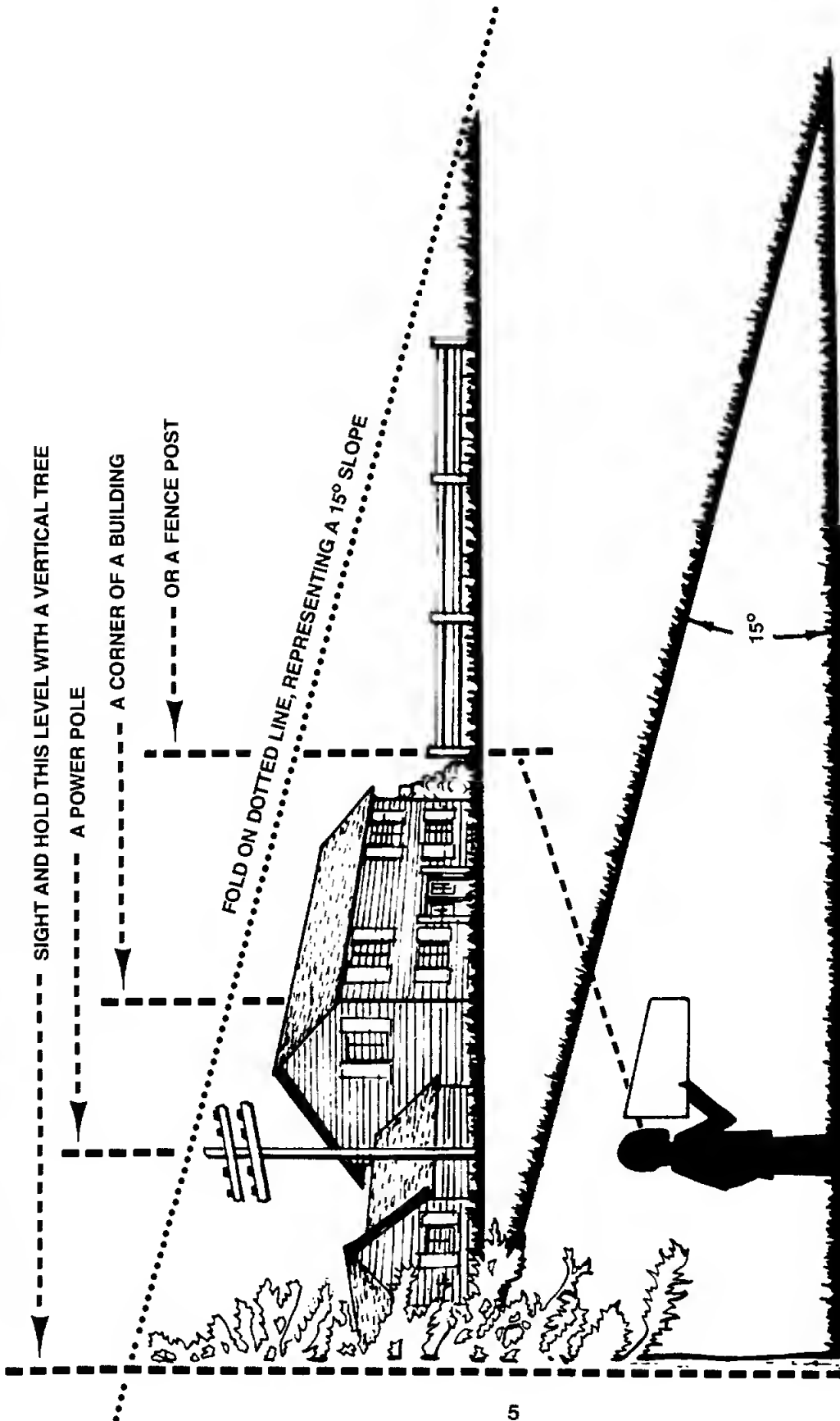
## WARNING

The only way to ensure the safe performance of your product is to use original equipment parts, which are designed and engineered to exacting specifications. When you substitute, you take a chance on quality, reliability, safety and performance. Use original equipment parts when repairing your mower.

# SLOPE GAUGE

(Keep this sheet in a safe place for future reference.)

USE THIS SHEET AS A GUIDE TO DETERMINE SLOPES WHERE YOU MAY NOT OPERATE SAFELY.



Do not mow on inclines with a slope in excess of 15 degrees (a rise of approximately 2-1/2 feet every 10 feet). A riding mower could overturn and cause serious injury. If operating a walk-behind mower on such a slope, it is extremely difficult to maintain your footing and you could slip, resulting in serious injury.

Operate RIDING mowers up and down slopes, never across the face of slopes.  
Operate WALK-BEHIND mowers across the face of slopes, never up and down slopes.



# UNPACKING

## TO REMOVE UNIT FROM CARTON

1. Remove staples, break glue on top flaps, or cut tape at carton end and peel along top flap to open carton.
2. Remove loose parts if included with unit (i.e., owner's manual, etc.).
3. Cut along dotted lines and lay carton down flat.
4. Remove packing material.
5. Slide unit out of carton. Check carton thoroughly for loose parts.

## TOOLS REQUIRED FOR ASSEMBLY

- (1) 1/2" Wrench
  - (2) 9/16" Wrenches
  - (1) Phillips Screwdriver
  - (1) 3/4" or Adjustable Wrench
- (Two 6" Adjustable Wrenches may be used instead of the above.)

## DISCONNECT SPARK PLUG WIRE

Before setting up your lawn mower, disconnect the spark plug wire from the spark plug, and ground it against the engine. See figure 4.

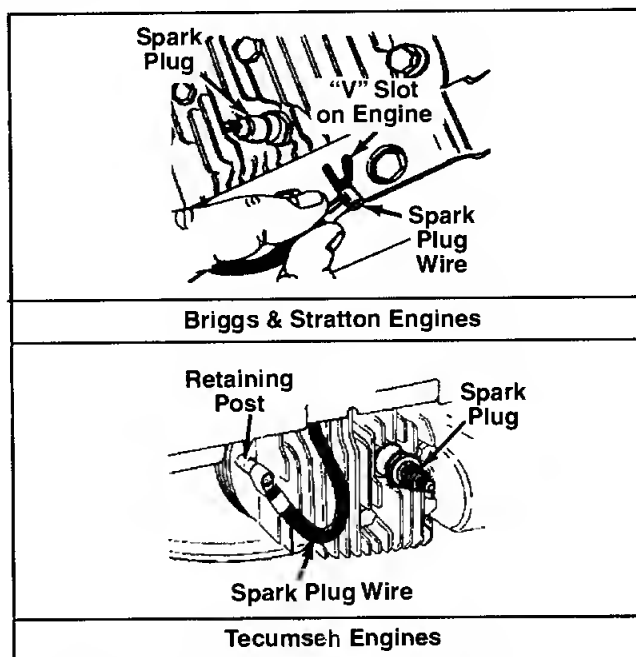


FIGURE 4.—Grounding the Spark Plug Wire

# ASSEMBLY INSTRUCTIONS

**IMPORTANT:** This unit is shipped **WITHOUT GASOLINE or OIL**. After assembly, service engine with gasoline and oil as instructed in the separate engine manual packed with your unit.

**NOTE:** Reference to right or left hand side of the mower is observed from the operating position.

This owner's guide covers various models of mowers. Follow only the instructions which pertain to your unit.

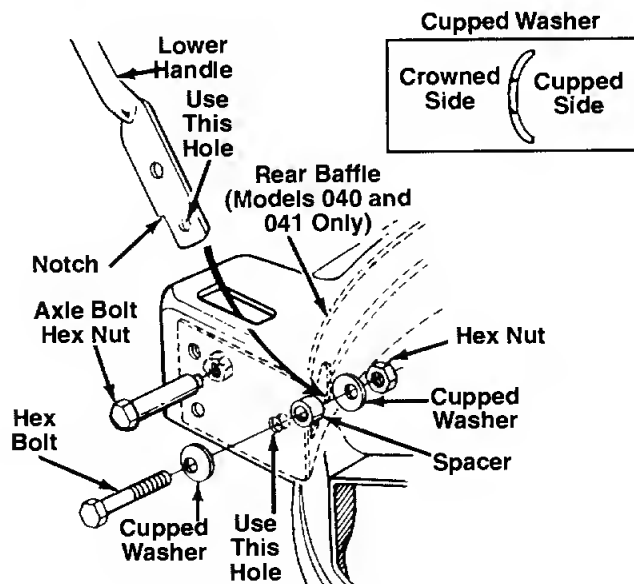


FIGURE 5A.— Models 030 thru 041

## ATTACHING THE LOWER HANDLE (Hardware A)

**Models 030 thru 041 only:**

1. Raise the rear of the deck and block securely.
2. **Model Series 040 only:** Place the rear baffle in position inside the rear of the deck. Use one axle bolt and hex nut on each side of the rear of the deck to secure baffle temporarily so you can attach the lower handle. See figure 5A.

**NOTE:** Remove axle bolt and nut when assembling the wheels, page 9.

3. Place one cupped washer on each hex bolt 1-1/2" long (crowned side of washer goes against the head of the hex bolt).
4. Insert the ends of the lower handle through the slots in the rear of the deck.

**NOTE:** It is helpful to have another person hold the handle in position as you continue.

5. Place one spacer between the bottom hole in lower handle and forward hole in deck (model 030 series) or baffle (model 040 series). See figure 5A. Use a screwdriver to pry the handle away from the deck or baffle if necessary.
6. Using a screwdriver, line up the forward hole in the deck or baffle, the spacer and the bottom hole in the handle, then insert hex bolt as shown from the outside of the deck.
7. Secure with cupped washer (cupped side against the handle) and hex lock nut. Do not tighten at this time.
8. Repeat steps 5 through 7 to attach the other side of the handle.
9. Tighten both hex bolts and nuts securely.

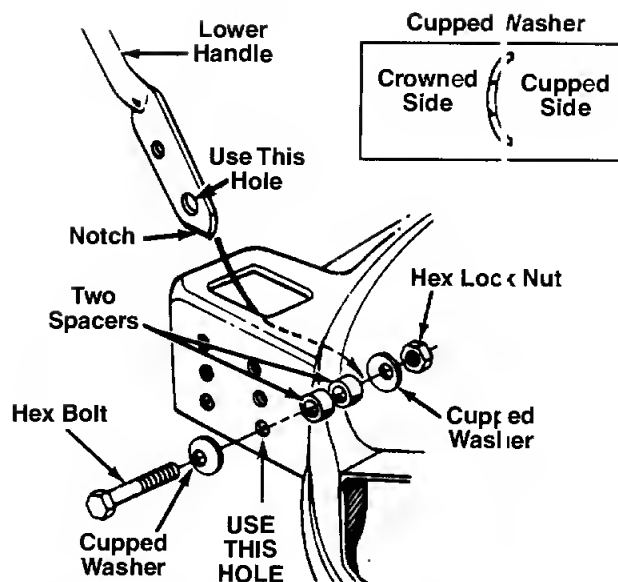


FIGURE 5B.— Models 050 thru 062

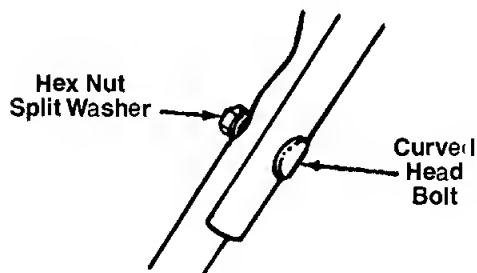


FIGURE 6.

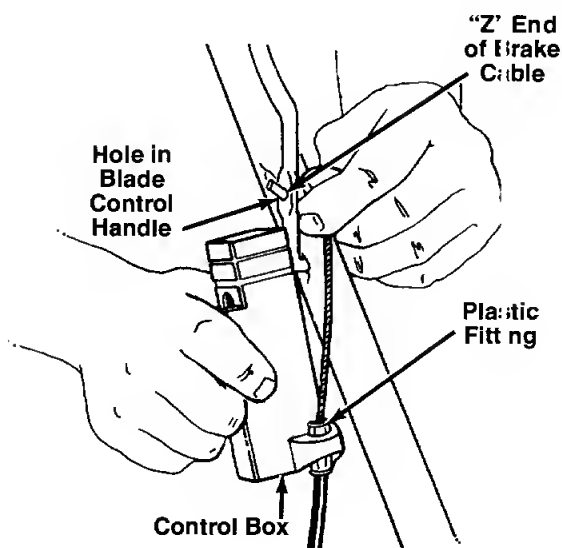


FIGURE 7.

## ATTACHING THE LOWER HANDLE (Hardware A)

### Models 050 thru 062 only:

1. Raise the rear of the deck and block securely.
2. Place one cupped washer on each hex bolt 1-1/2" long (crowned side of washer goes against the head of the hex bolt).
3. Insert the ends of the lower handle through the slots in the rear of the deck.

**NOTE:** It is helpful to have another person hold the handle in position as you continue.

4. Place **two** spacers between the bottom hole in lower handle and **bottom inside hole** of the deck. See figure 5B. Use a screwdriver to pry the handle away from the deck if necessary.
5. Using a screwdriver, line up the bottom inside hole in the deck, the spacers and the bottom hole in the handle, then insert hex bolt as shown from the outside of the deck.
6. Secure with cupped washer (cupped side against the handle) and hex lock nut. Do not tighten at this time.
7. Repeat steps 4 through 6 to attach the other side of the handle.
8. Tighten both hex bolts and nuts securely.

## ATTACHING THE UPPER HANDLE (Hardware B)

1. Place the upper handle in position over the lower handle. The hole in the side of the blade control handle (attached to the upper handle) must be on the left side.
2. Secure the upper handle to lower handle using the curved head bolts, split washers and hex nuts as shown in figure 6. The head of the carriage bolts go on the outside of the handle.

## ATTACHING THE CONTROL BOX

One end of the brake cable is attached to the engine. The other end is attached to the control box. Attach the control box to the upper handle as follows.

**NOTE:** If the control handle is disassembled from the upper handle for any reason, assemble the control handle by inserting the ends into the holes on each side of the upper handle. The hole in the control handle must be on the left side of the upper handle, and control handle must touch the upper handle when engaged (squeezed against the upper handle).

1. Remove the truss machine screw and hex lock nut from the middle of the control box using a phillips screwdriver. Place your finger over the hex lock nut to hold it inside the control box so you can unscrew the truss machine screw.
2. Make certain the blade control handle is on **top** of the upper handle.
3. Route the control box (with cable attached) under the lower handle.



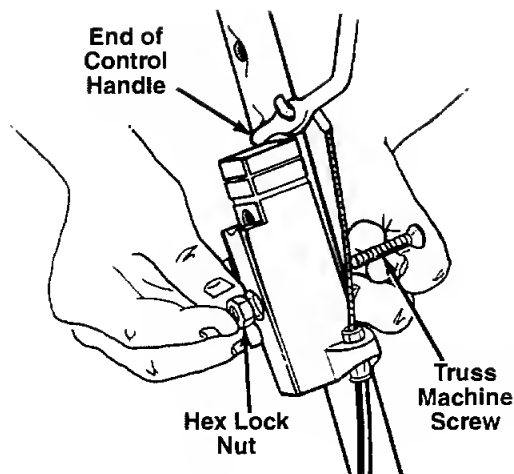


FIGURE 8.

4. Holding the control box near the left side of the upper handle (control box must be inside the handle), hook the "Z" end of the brake cable into the control handle from the **outside** to the **inside**. See figures 7 and 8.
5. Place the control box on the upper handle just below (touching) the end of the control handle as shown in figure 8. Secure with hardware removed in step one by placing hex lock nut into the indent on the inside of the control box. Screw the truss machine screw into the hex lock nut.

### SECURING THE CABLE (Hardware D)

Secure the cable to the left side of the handle as follows.



**WARNING:** When attaching the control cable, the cable must be routed to avoid contact with all sharp edges and hot surfaces to prevent damage to the cable, which will render the controls inoperative.

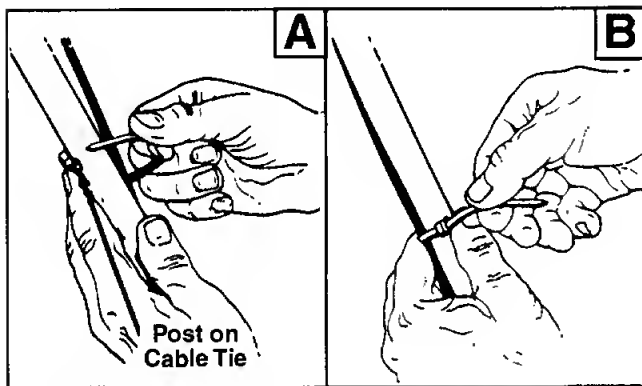


FIGURE 9.

1. Insert posts on cable ties into holes provided on the inside of the handle, one on the upper handle and two on the lower handle. The holes may be either on the inside or outside of the handles. See figure 9A.
2. Secure the cable with the cable ties. See figure 9B. Trim excess ends of cable ties.

### INSTALLATION OF WHEELS (Hardware E)

The three holes provide three cutting heights for your mower. Use the same hole location for all four wheels when assembling. If wheels are to be assembled in the lowest cutting position (highest hole in the deck), refer to the note below.

If your mower has two sets of holes (see figure 10), the front wheels must be assembled in one of the three holes nearest the front of the deck. The rear wheels must be assembled in one of the three holes nearest the rear of the deck.

To assemble the wheels: (See figure 10)

1. Block up the mower securely.
2. Place axle bolt through wheel. (Hub side of wheel must face deck.)
3. Place one smaller cupped washer on axle bolt, with the cupped side of washer toward the deck (away from wheel).

**NOTE:** If the lowest cutting position (highest hole in the deck) is used, it is necessary to place the larger washer on the outside of the deck and the smaller washer on the inside.

4. Secure wheel to deck with one larger cupped washer on the inside of the deck (cupped side against the deck) and hex nut. Tighten securely.
5. Assemble the other wheels in the same manner. Remove the blocks.

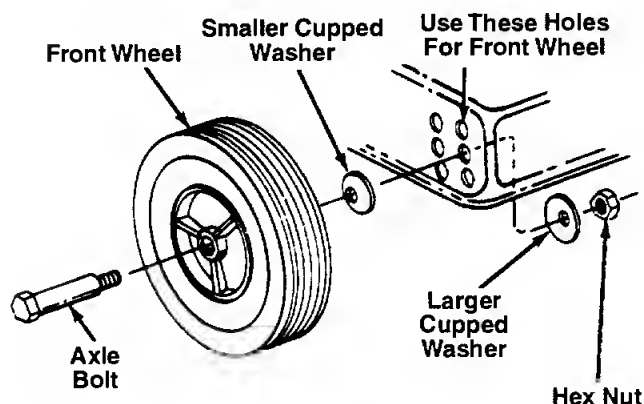


FIGURE 10.

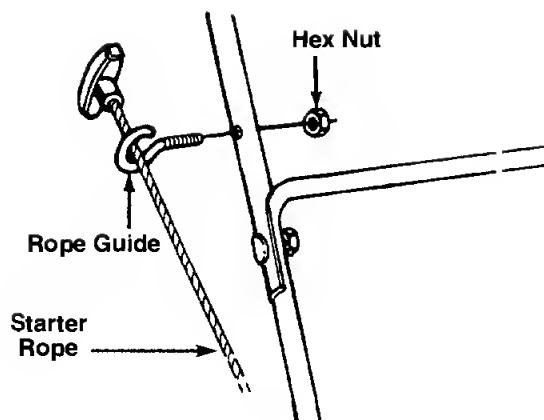


FIGURE 11.

### ATTACHING THE STARTER ROPE (Hardware C)

1. The starter rope is inside the top of the engine. With the spark plug wire disconnected and grounded, depress the blade control handle and pull the rope out of the engine.
2. Place the rope guide around the starter rope, so the opening in the rope guide is toward the front of the mower as shown. Insert the rope guide into the right side of the handle, and secure with hex lock nut. See figure 11.

← 11.

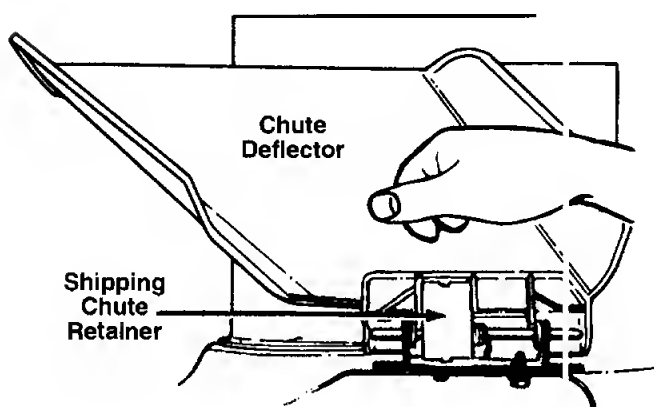


FIGURE 12.

### FINAL ASSEMBLY OF MOWER

1. The chute deflector on your mower is held in an upright position by a retainer for shipping purposes only. This shipping retainer must be removed and discarded before the mower is put into operation. See figure 12.

←

To remove the shipping chute retainer, move the spring-loaded chute toward the engine by pushing above the retainer. Remove the retainer and carefully lower the chute into operating position, keeping fingers out of the way.

2. Make certain all nuts and bolts are tightened securely.

## CONTROLS

### BLADE CONTROL HANDLE



**WARNING:** This control mechanism is a safety device. Never attempt to bypass its operations.

The blade control handle is located on the upper handle of the mower. See figure 13. The blade control handle must be depressed in order to operate the unit. **Release the blade control handle to stop the engine and blade.**



**WARNING:** The blade will be rotating whenever the engine is running.

### RECOIL STARTER

The recoil starter handle is attached to the handle and is used to start the engine. See figure 13.

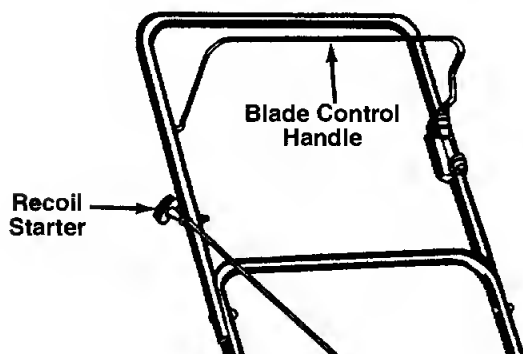


FIGURE 13.

## OPERATION

Keep hands and feet away from the chute area on cutting deck. See figure 1, warning label.

The operation of any lawn mower can result in foreign objects being thrown into the eyes, which can result in severe eye damage. Always wear safety glasses or eye shields. We recommend wide vision safety mask for over spectacles or standard safety glasses.



### GAS AND OIL FILL-UP

Service the engine with gasoline and oil as instructed in the separate engine manual packed with your mower. Read instructions carefully.



**WARNING:** Never fill fuel tank indoors, with engine running or until the engine has been allowed to cool for at least two minutes after running.

### TO START ENGINE AND ENGAGE BLADE

**NOTE:** Your engine is a constant speed engine, which is set at full throttle for best performance.

1. Attach spark plug wire securely to spark plug.
2. Prime engine as instructed in the separate engine manual.
3. Standing behind the unit, depress the blade control handle and hold it against the upper handle as shown in figure 14.
4. Grasp starter handle and pull rope out slowly until engine reaches start of compression cycle (rope will pull slightly harder at this point). Let the rope rewind slowly.
5. Pull rope with a rapid, continuous, full arm stroke. Keep a firm grip on starter handle. Return it slowly to the rope guide.

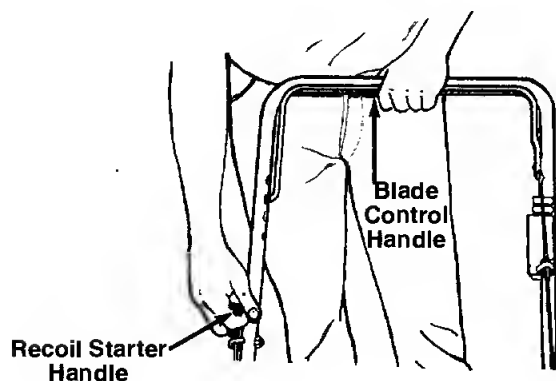


FIGURE 14.

**NOTE:** If any problems are encountered, refer to the Trouble Shooting Guide on page 13.

### TO STOP ENGINE AND BLADE

1. Release the blade control handle to stop the engine and blade.



**WARNING:** The blade continues to rotate for a few seconds after the engine is shut off.

2. Disconnect the spark plug wire and ground it against the engine to prevent accidental starting while equipment is unattended.

### USING YOUR ROTARY MOWER

Be sure that lawn is clear of stones, sticks, wire, or other objects which could damage lawn mower or engine. Such objects could be accidentally thrown by the mower in any direction and cause serious personal injury to the operator and others.

For best results, do not cut wet grass because it tends to stick to the underside of the mower, preventing proper discharge of grass clippings, and could cause you to slip and fall. New grass or thick grass may require a narrower cut.

The best mowing pattern is one that allows the clippings to discharge towards the uncut part of the lawn. This permits recutting of the clippings to further pulverize them. When cutting high weeds, discharge towards cut portion, then recut at right angles to first direction.

For a healthy lawn, never cut off more than one-third of the total length of the grass. Lawn should be cut in the fall as long as there is growth.



**WARNING:** If you strike a foreign object, stop the engine. Remove wire from spark plug, thoroughly inspect the mower for any damage, and repair the damage before restarting and operating the mower. Extensive vibration of the mower during operation is an indication of damage. The unit should be promptly inspected and repaired.

## ADJUSTMENTS



**WARNING:** Do not at any time make any adjustment to lawn mower without first stopping engine and disconnecting spark plug wire.

### CUTTING HEIGHT ADJUSTMENT

Adjustment may be made by removing and moving axle bolts to desired position. Cutting heights will be raised as axle bolts are moved to a lower hole and lowered as axle bolts are moved to a higher hole in the deck. All axle bolts must be mounted in the same relative position. Cupped washers must be assembled so that the cupped side of the washers are against the deck. Refer to figure 10.

### CARBURETOR ADJUSTMENTS



**WARNING:** If any adjustments are made to the engine while the engine is running (e.g. carburetor), keep clear of all moving parts. Be careful of heated surfaces and muffler.

Minor carburetor adjustment may be required to compensate for differences in fuel, temperature, altitude and load. Refer to the separate engine manual packed with your mower for carburetor adjustment information.

**NOTE:** A dirty air cleaner will cause an engine to run rough. Be certain air cleaner is clean and attached to the carburetor before adjusting carburetor.

## LUBRICATION



**WARNING:** Always stop engine and disconnect spark plug wire before cleaning, lubricating or doing any kind of work on lawn mower.

**Blade Control**—Lubricate the pivot points on the blade control handle and the brake cable at least once a season with light oil. See figure 15. The blade control must operate freely in both directions.

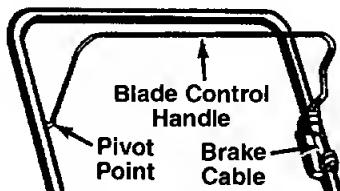


FIGURE 15.

**Chute Deflector**—The torsion spring and pivot point should be lubricated periodically with light oil to prevent any rust or binding. Deflector must work freely.

**Wheels**—The wheels require no lubrication. However, if the wheels are removed for any reason, lubricate the surface of the axle bolt and the inner surface of the wheel with light oil. Engine oil may also be used.

**Engine**—Follow engine manual for lubrication instructions.

## MAINTENANCE



**WARNING:** Be sure to disconnect and ground the spark plug wire before performing any repairs or maintenance.

**NOTE:** When tipping the unit, empty the fuel tank and keep engine spark plug side up.

### TROUBLE SHOOTING

Refer to page 13 of this manual for trouble shooting information.

### CUTTING BLADE

When removing the cutting blade for sharpening or replacement, protect hands by using heavy gloves or a rag to grasp the cutting blade. Remove the bolt and blade support or bell washer which hold the blade and adapter to the engine crankshaft. Remove the blade and adapter from the crankshaft.

If the blade is secured to the blade adapter with two bolts, remove the two small bolts, lock washers and nuts which hold the blade to the adapter.



**WARNING:** Periodically inspect the blade adapter for cracks, especially if you strike a foreign object. Replace when necessary.

When sharpening the blade, follow the original angle of grind as a guide. It is **extremely important** that each cutting edge receives an equal amount of grinding to prevent an unbalanced blade. An unbalanced blade will cause excessive vibration when rotating at high speeds, may cause damage to the mower and could break, causing personal injury.

The blade can be tested by balancing it on a round shaft screwdriver. Remove metal from the heavy side until it balances evenly. It is recommended that the blade always be removed from the adapter for the best test of balance.

Before reassembling the blade and the blade adapter to the unit, lubricate the engine crankshaft and the inner surface of the blade adapter with light oil (or engine oil). Lubricating the bolt holes, bolts and inner surface of the nuts is also recommended.

### THREE BOLT BLADE MOUNTING

Install the blade to the blade adapter with the side of the blade marked "bottom" (or with part number) facing away from the adapter. Refer to figure 16. Insert two hex bolts up through the blade and adapter and secure with lock washers and hex nuts. Tighten according to "Blade Mounting Torque" section below.

Place the blade and blade adapter assembly on the engine crankshaft.

**NOTE:** If the adapter is keyed, make sure the key in the adapter is aligned with the key slot on the crankshaft.

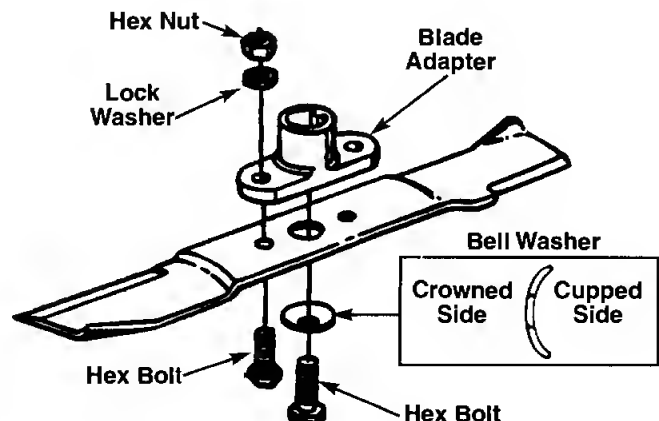


FIGURE 16.—Three Bolt Blade Mounting

Place the bell washer on the hex nut with the crowned side of the bell washer against the head of the bolt (see inset of bell washer). Insert the hex bolt and bell washer assembly through the blade and blade adapter and tighten the hex bolt to the torque listed in the "Blade Mounting Torque" section below.

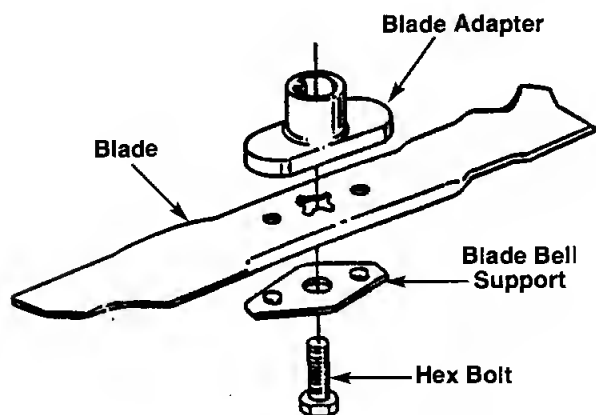


FIGURE 17.—One Bolt Blade Mounting

### SINGLE BOLT BLADE MOUNTING

Install the blade adapter on the crankshaft with the "star" away from the engine. Refer to figure 17. Place the blade with the side marked bottom (or with part number) facing away from the adapter. Align the blade bell support over the blade with the tabs in the holes of the blade and insert the hex bolt. Tighten the hex bolt to the torque listed in the "Blade Mounting Torque" section below.

#### Blade Mounting Torque

Center Bolt: 450 in. lbs. min., 600 in. lbs. max.

Blade Adapter Bolts (if applicable): 200 in. lbs. min., 350 in. lbs. max.

To ensure safe operation of your unit, **all** nuts and bolts must be checked periodically for correct tightness.

### DECK

The underside of the mower deck should be cleaned after each use to prevent a buildup of grass clippings, leaves, dirt or other matter. If this debris is allowed to accumulate, it will invite rust and corrosion, and may cause an uneven discharge of grass clippings at the next cutting.

The deck may be cleaned by tilting the mower and scraping clean with a suitable tool (make certain the spark plug wire is disconnected).

### ENGINE

Refer to the separate engine manual for engine maintenance instructions.

Maintain **engine oil** as instructed in the separate engine manual packed with your unit. Read and follow instructions carefully.

Service **air cleaner** every 25 hours under normal conditions. Clean every few hours under extremely dusty conditions. Poor engine performance and flooding usually indicates that the air cleaner should be serviced. To service the air cleaner, refer to the separate engine manual packed with your unit.

The **spark plug** should be cleaned and the gap reset once a season. Spark plug replacement is recommended at the start of each mowing season; check engine manual for correct plug type and gap specifications.

**Clean the engine** regularly with a cloth or brush. Keep the cooling system (blower housing area) clean to permit proper air circulation which is essential to engine performance and life. Be certain to remove all grass, dirt and combustible debris from muffler area.

## OFF-SEASON STORAGE

The following steps should be taken to prepare lawn mower for storage.

1. Clean and lubricate mower thoroughly as described in the lubrication instructions.
2. Refer to engine manual for correct engine storage instructions.
3. Coat mower's cutting blade with chassis grease to prevent rusting.
4. Store mower in a dry, clean area. Do not store next to corrosive materials, such as fertilizer.

**NOTE:** When storing any type of power equipment in an unventilated or metal storage shed, care should be taken to rust-proof the equipment. Using a light oil or silicone, coat the equipment, especially cables and all moving parts.

# TROUBLE SHOOTING GUIDE

Trouble	Possible Cause(s)	Corrective Action
Engine fails to start	<ol style="list-style-type: none"> <li>1. Blade control handle disengaged.</li> <li>2. Spark plug wire disconnected.</li> <li>3. Fuel tank empty, or stale fuel.</li> <li>4. Blocked fuel line (if so equipped).</li> <li>5. Faulty spark plug.</li> <li>6. Engine flooded.</li> </ol>	<ol style="list-style-type: none"> <li>1. Engage blade control handle.</li> <li>2. Connect wire to spark plug.</li> <li>3. Fill tank with clean, fresh gasoline.</li> <li>4. Clean fuel line.</li> <li>5. Clean, adjust gap or replace.</li> <li>6. Crank engine with throttle (if so equipped) in OFF position.</li> </ol>
Engine runs erratic	<ol style="list-style-type: none"> <li>1. Spark plug wire loose.</li> <li>2. Blocked fuel line (if so equipped) or stale fuel.</li> <li>3. Vent in gas cap plugged.</li> <li>4. Water or dirt in fuel system.</li> <li>5. Dirty air cleaner.</li> <li>6. Carburetor out of adjustment.</li> </ol>	<ol style="list-style-type: none"> <li>1. Connect and tighten spark plug wire.</li> <li>2. Clean fuel line; fill tank with clean, fresh gasoline.</li> <li>3. Clear vent.</li> <li>4. Drain fuel tank. Refill with fresh fuel.</li> <li>5. Clean air cleaner.†</li> <li>6. Adjust carburetor.†</li> </ol>
Engine overheats	<ol style="list-style-type: none"> <li>1. Engine oil level low.</li> <li>2. Air flow restricted.</li> <li>3. Carburetor not adjusted properly.</li> </ol>	<ol style="list-style-type: none"> <li>1. Fill crankcase with proper oil.</li> <li>2. Remove blower housing and clean.†</li> <li>3. Adjust carburetor.†</li> </ol>
Occasional skip (hesitates) at high speed	<ol style="list-style-type: none"> <li>1. Spark plug gap too close.</li> <li>2. Carburetor idle mixture adjustment improperly set.</li> </ol>	<ol style="list-style-type: none"> <li>1. Adjust gap to .030".</li> <li>2. Adjust carburetor.†</li> </ol>
Idles poorly	<ol style="list-style-type: none"> <li>1. Spark plug fouled, faulty or gap too wide.</li> <li>2. Carburetor improperly adjusted.</li> <li>3. Dirty air cleaner.</li> </ol>	<ol style="list-style-type: none"> <li>1. Reset gap to .030" or replace spark plug.</li> <li>2. Adjust carburetor.†</li> <li>3. Clean air cleaner.†</li> </ol>
Excessive vibration	<ol style="list-style-type: none"> <li>1. Cutting blade loose or unbalanced.</li> <li>2. Bent cutting blade.</li> </ol>	<ol style="list-style-type: none"> <li>1. Tighten blade and adapter. Balance blade.</li> <li>2. Replace blade.</li> </ol>
Mower will not discharge grass	<ol style="list-style-type: none"> <li>1. Engine speed too low.</li> <li>2. Wet grass.</li> <li>3. Excessively high grass.</li> </ol>	<ol style="list-style-type: none"> <li>1. Set throttle between 3/4 and full throttle.</li> <li>2. Do not mow when grass is wet; wait until later to cut.</li> <li>3. Mow once at a high cutting height, then mow again at desired height or make a narrower cutting swath (1/2 width).</li> </ol>
Uneven cut	<ol style="list-style-type: none"> <li>1. Wheels not positioned correctly.</li> <li>2. Dull blade.</li> </ol>	<ol style="list-style-type: none"> <li>1. Place all four wheels in same height position.</li> <li>2. Sharpen or replace blade.</li> </ol>

†Refer to separate engine manual packed with your unit.

Note: For repairs beyond the minor adjustments listed above, please contact your local authorized service dealer.

For Parts, Accessories or Service Information,

**Call 1-800-800-7310**

**Copy the  
information from  
your model  
plate here:**

Model Number

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Serial Number

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Product Number

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May not fill all the above spaces

equipment parts and  
accessories. When you  
substitute,  
you take a chance on  
quality, reliability, safety  
and performance.



**WARNING:** The Engine Exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.